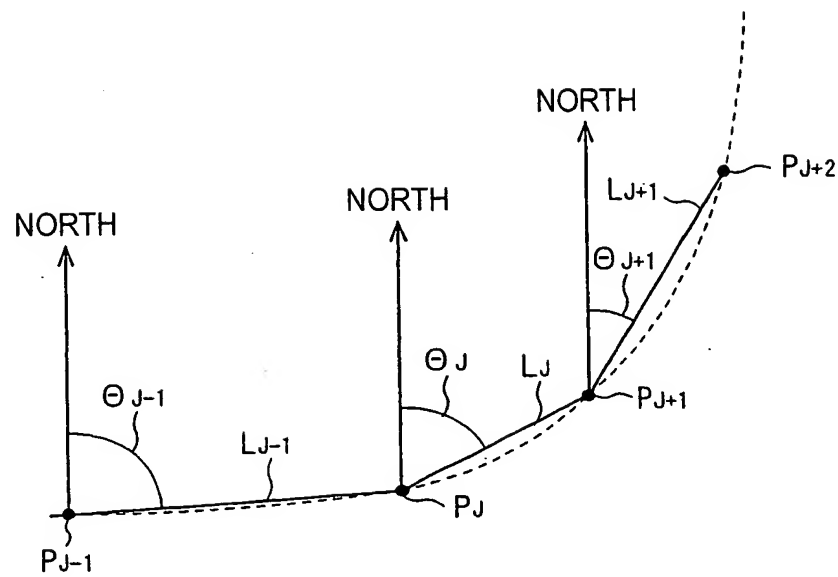


FIG. 1



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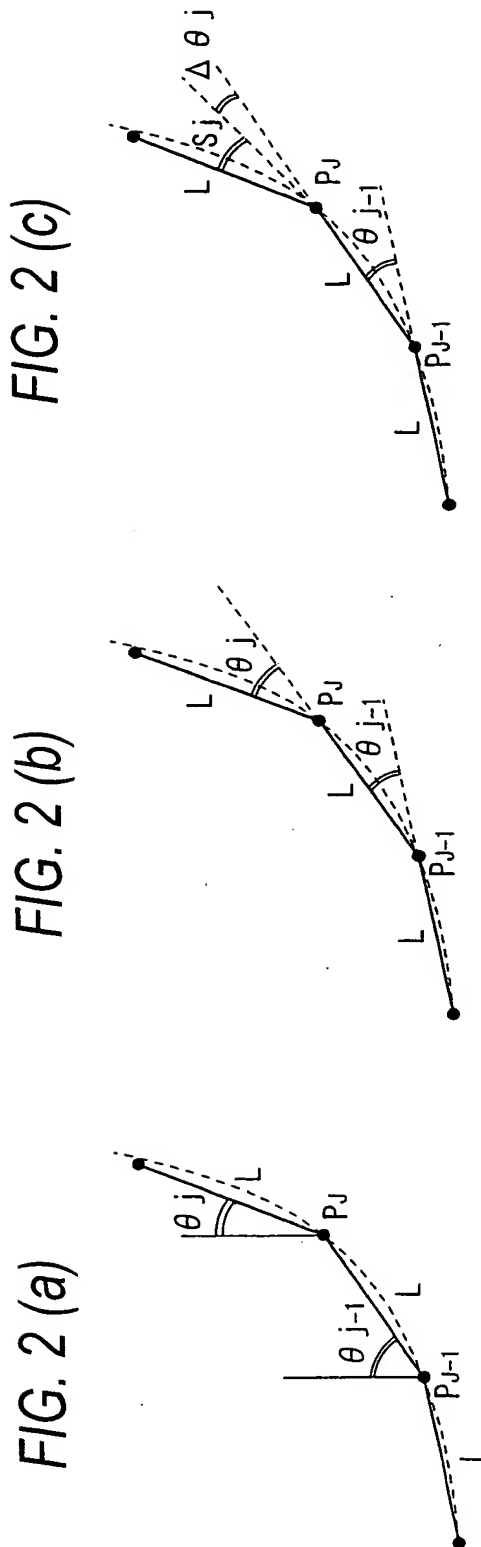
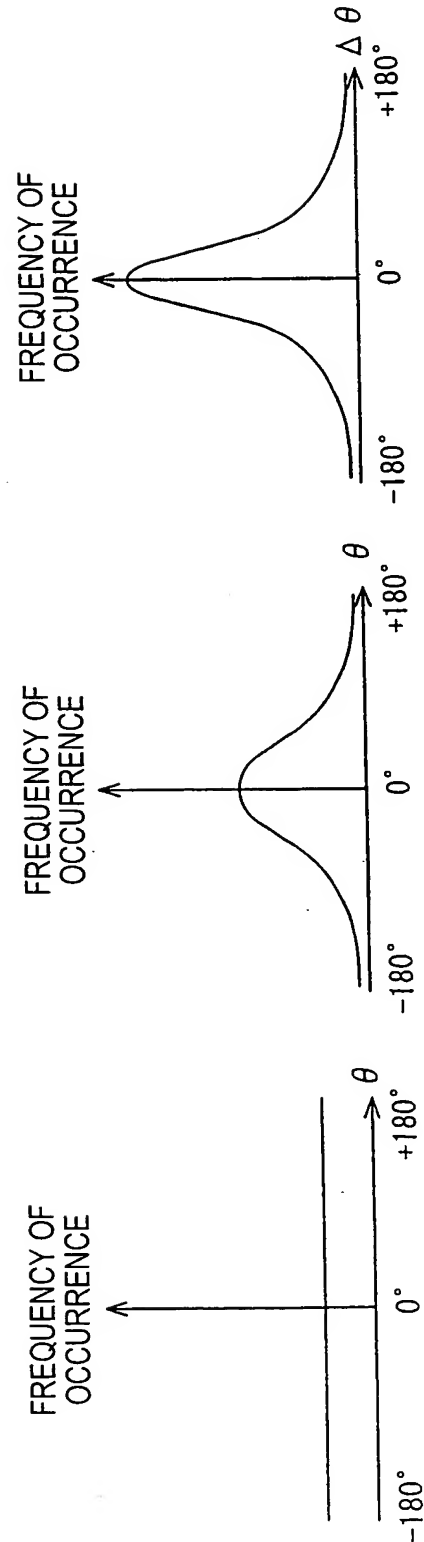


FIG. 2 (d)

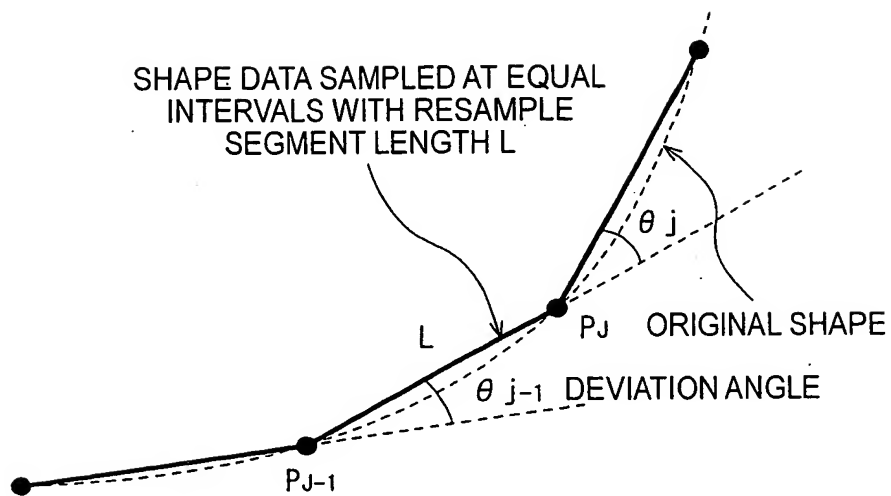
FIG. 2 (e)

FIG. 2 (f)



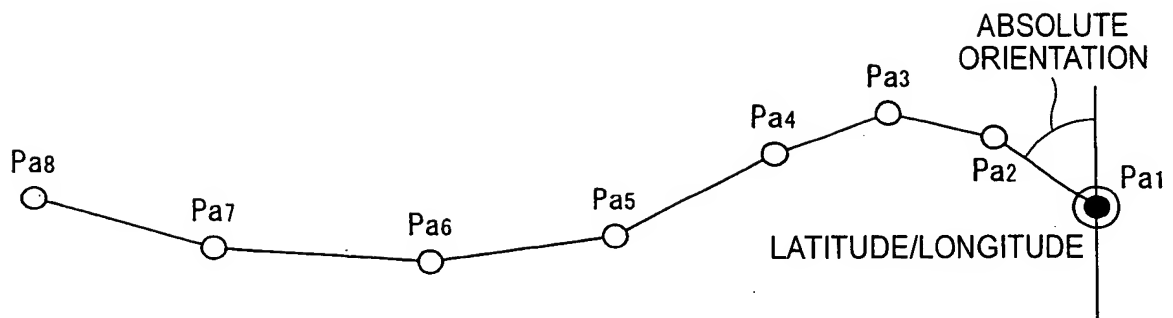
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FIG. 3



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FIG. 4



STARTING-END LOCATION INFORMATION: TOTAL 73 BITS

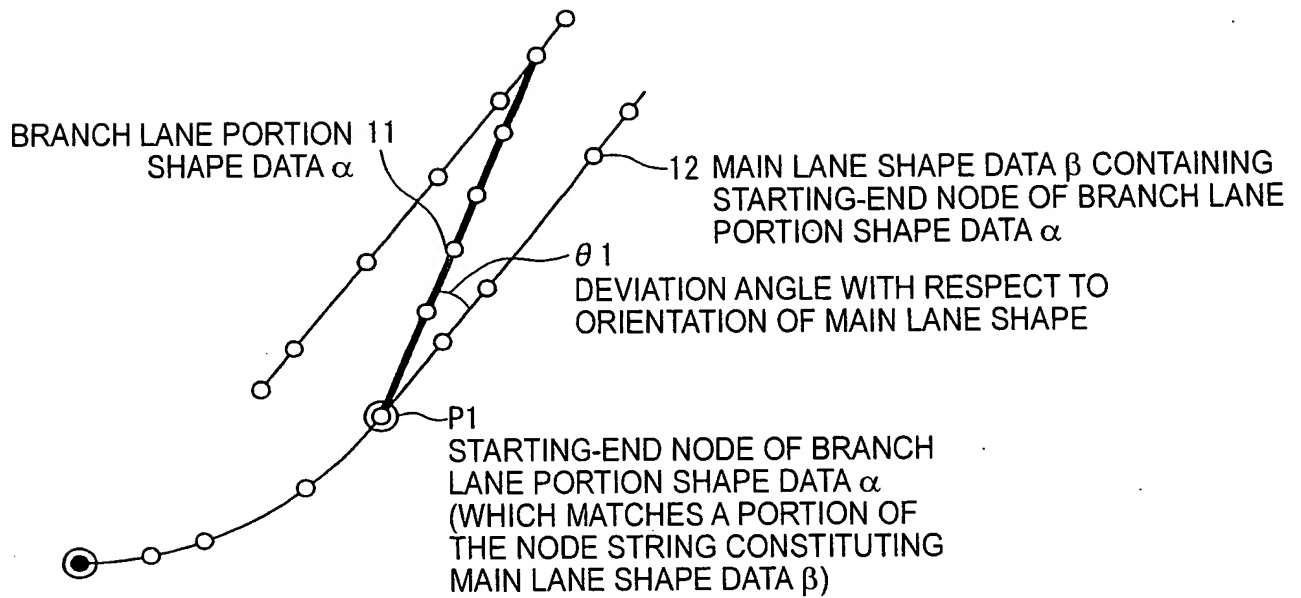
LATITUDE: 32 BITS

LONGITUDE: 32 BITS

ABSOLUTE ORIENTATION: 9 BITS

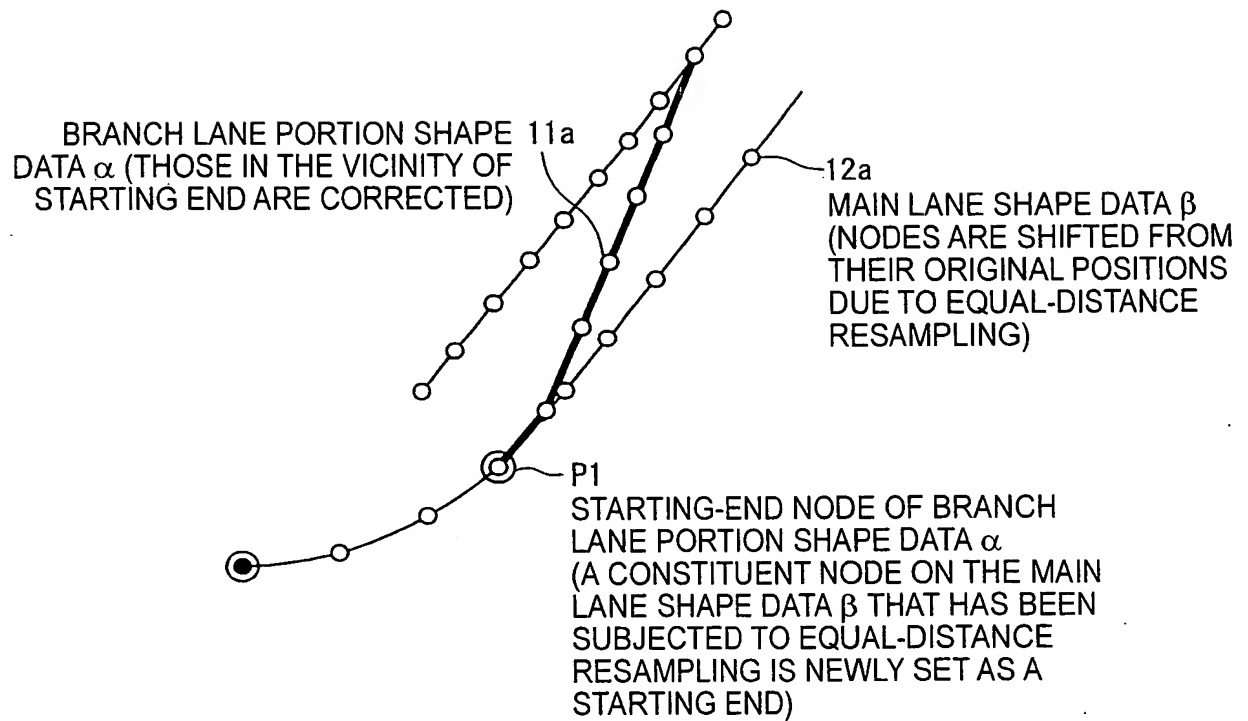
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FIG. 5



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FIG. 6



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FIG. 7

100  
↙

VECTOR DATA TYPE (= ROAD)
SHAPE DATA NUMBER (#1)
CODE TABLE NUMBER
SAMPLE SEGMENT LENGTH L (m)
TOTAL NODE NUMBER
REPRESENTATION FORM IDENTIFIER OF STARTING-END LOCATION (= ABSOLUTE LATITUDE AND LONGITUDE)
ABSOLUTE COORDINATE OF NODE P1 IN X ORIENTATION (LONGITUDE)
ABSOLUTE COORDINATE OF NODE P1 IN Y ORIENTATION (LATITUDE)
ABSOLUTE ORIENTATION BETWEEN NODES P1 → P2
CODED DATA OF SHAPE (BIT STRING OF DEVIATION ANGLE $\theta_j$ OR DEVIATION ANGLE STATISTICAL PREDICTED VALUE DIFFERENCE $\Delta\theta_j$ THAT IS CODED)
⋮
SHAPE DATA NUMBER (#2)
⋮

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FIG. 8

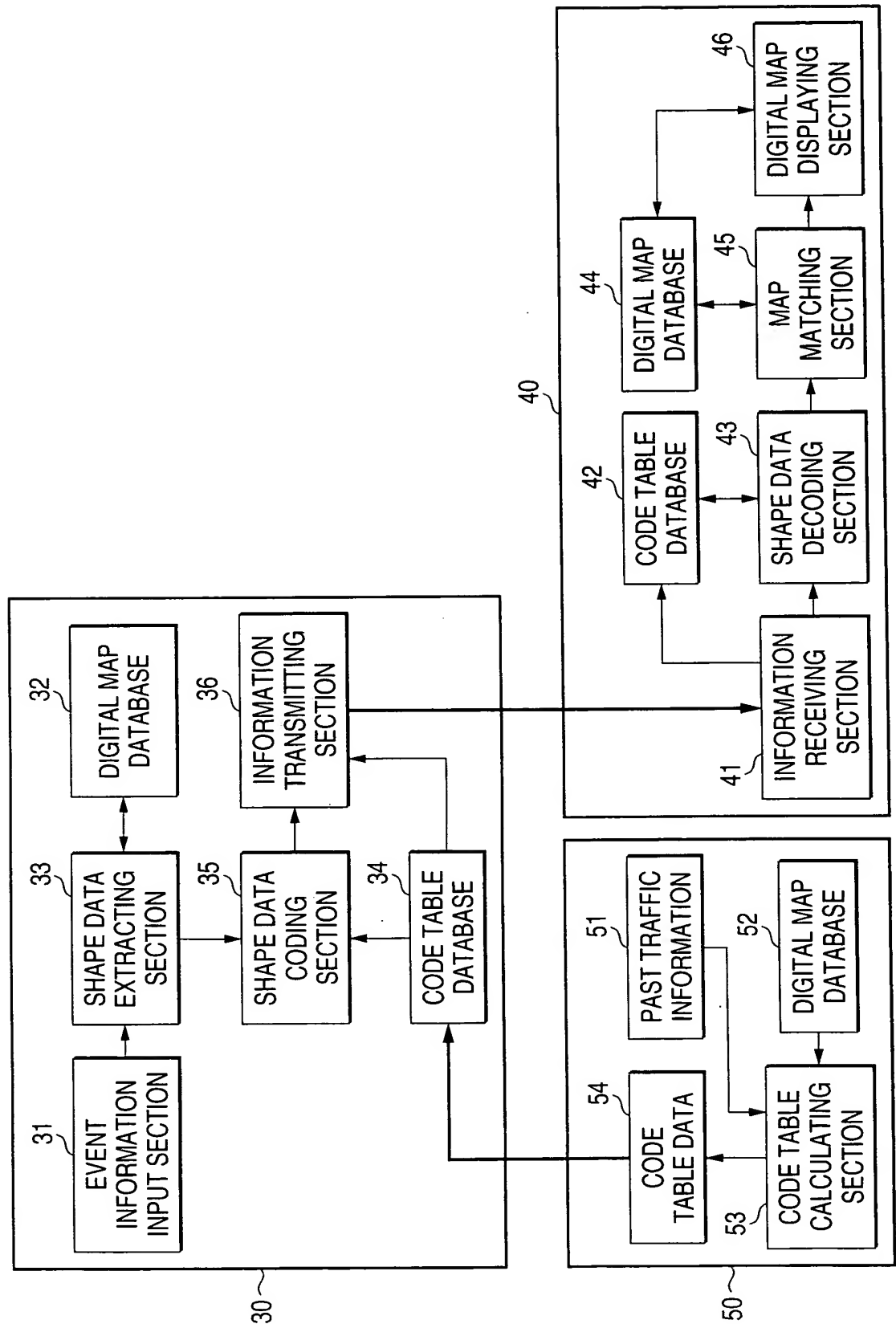
100  
↙

VECTOR DATA TYPE (= ROAD)
SHAPE DATA NUMBER (#1)
CODE TABLE NUMBER
SAMPLE SEGMENT LENGTH L (m)
TOTAL NODE NUMBER
REPRESENTATION FORM IDENTIFIER OF STARTING-END LOCATION (= FIRST REPRESENTATION FORM)
SHAPE DATA NUMBER TO BE REFERENCED (= $\beta$ )
NUMBER OF NODES FROM THE STARTING END OF SHAPE DATA $\beta$
DEVIATION ANGLE FROM THE ORIENTATION OF MAIN LANE SHAPE
CODED DATA OF SHAPE (BIT STRING OF DEVIATION ANGLE $\theta_j$ OR DEVIATION ANGLE STATISTICAL PREDICTED VALUE DIFFERENCE $\Delta\theta_j$ THAT IS CODED)
⋮
SHAPE DATA NUMBER (#2)
⋮



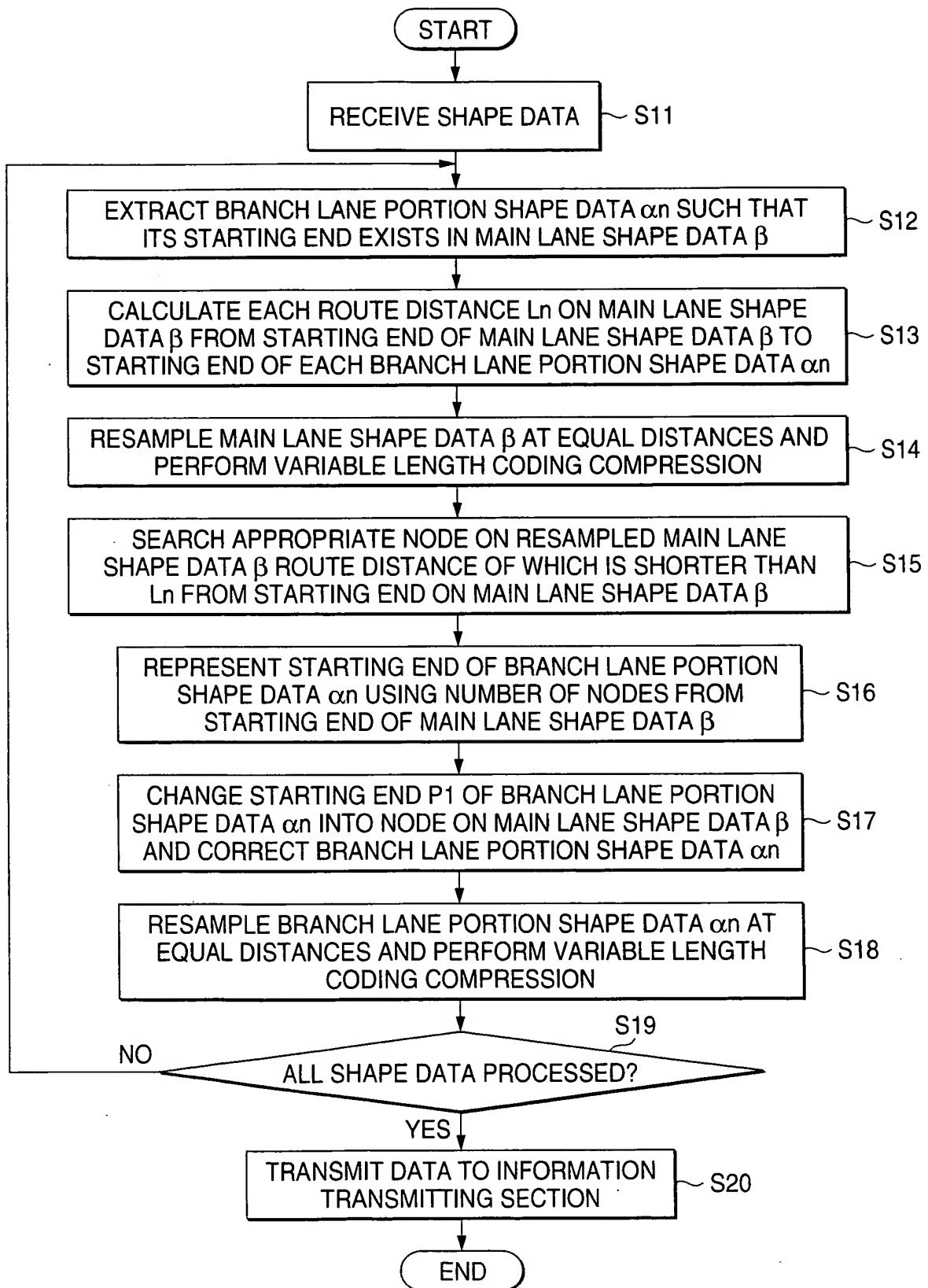
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FIG. 9



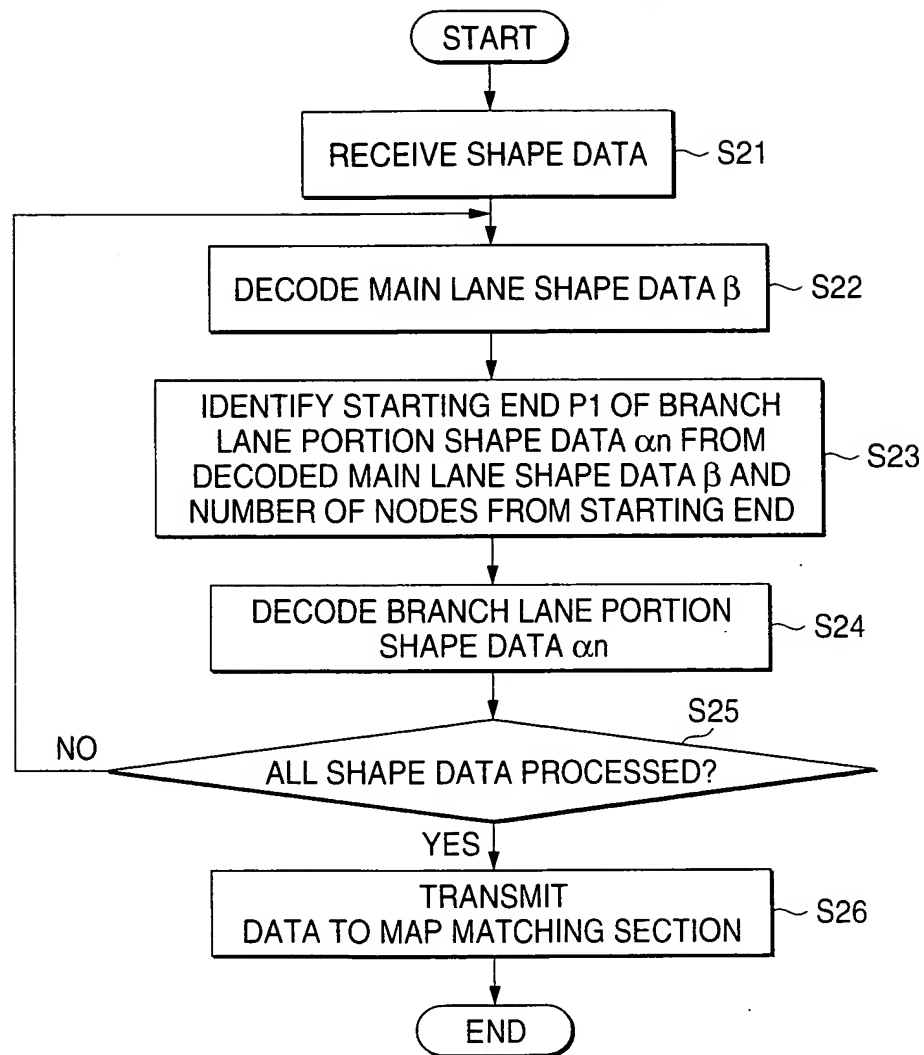
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FIG. 10



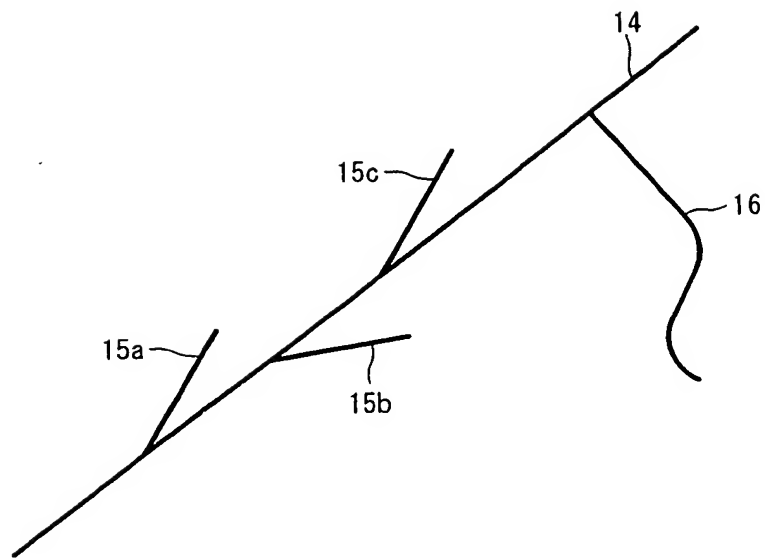
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FIG. 11



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FIG. 12



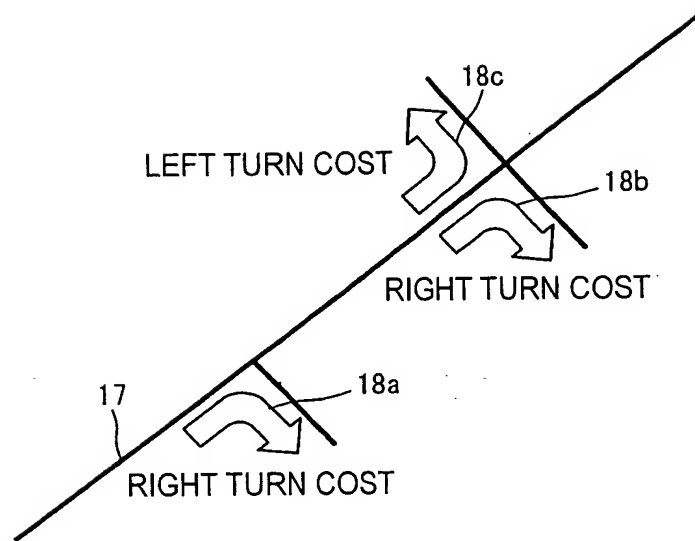
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FIG. 13

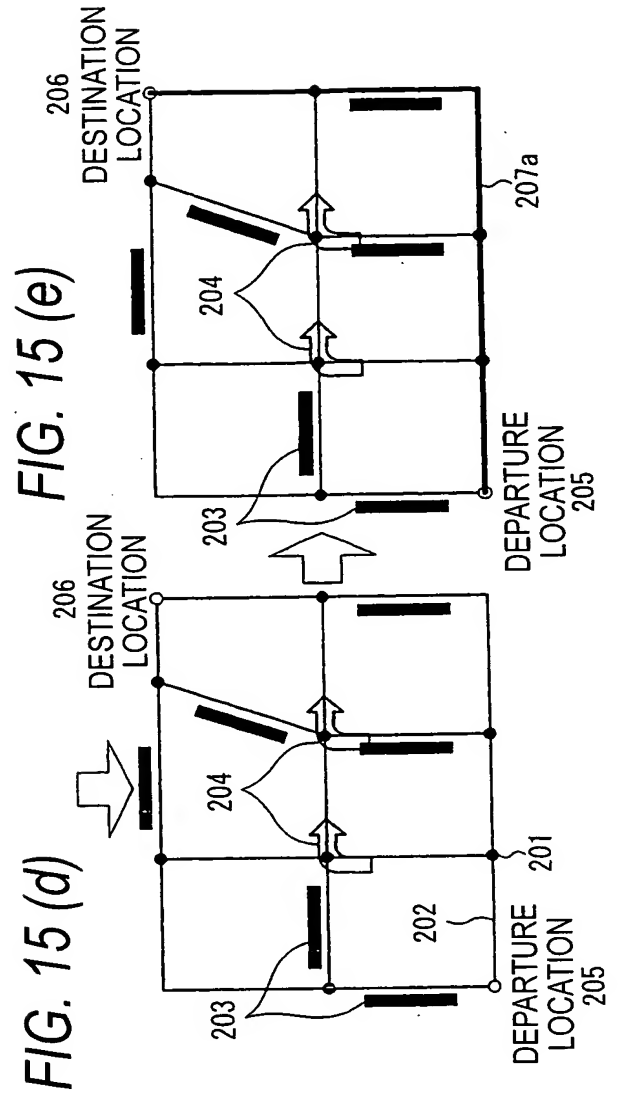
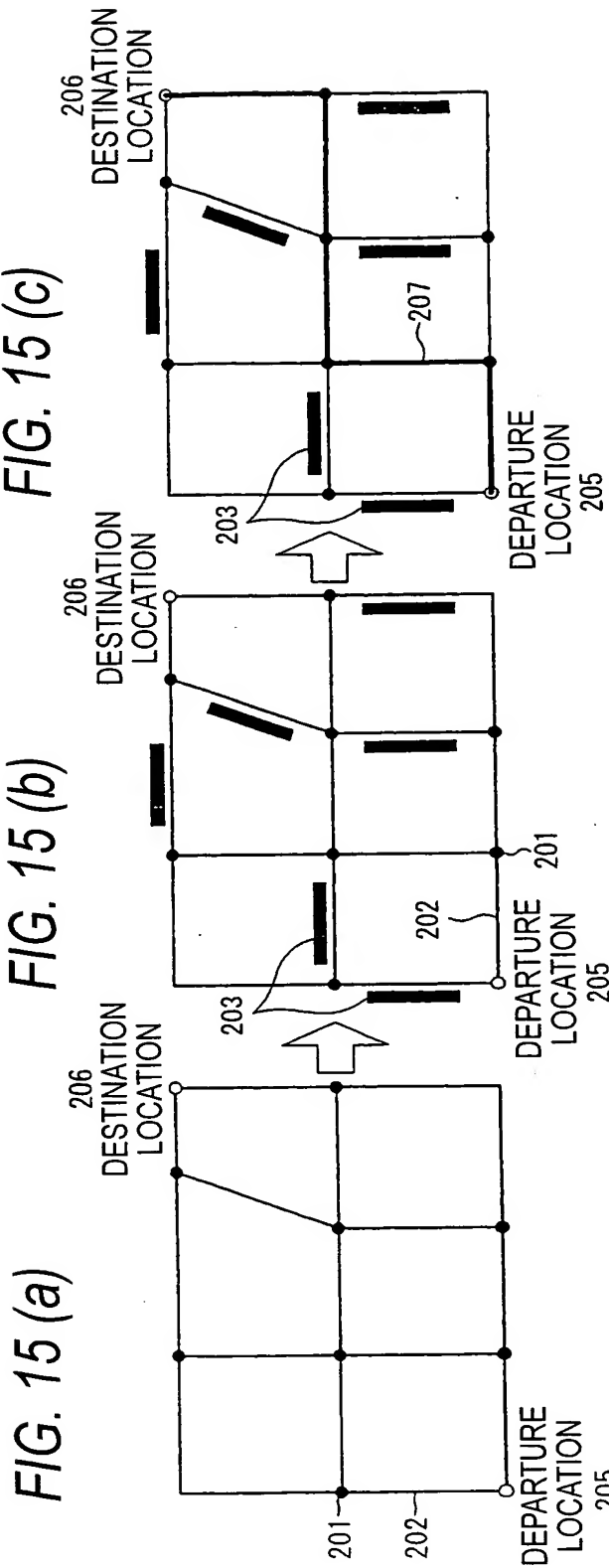
VECTOR DATA TYPE (= ROAD)	102
⋮	
SHAPE DATA NUMBER (#N-1)	102a: SHAPE DATA TO BE REFERENCED (ABSOLUTE COORDINATE REPRESENTATION)
CODE TABLE NUMBER	
SAMPLE SEGMENT LENGTH L (m)	
TOTAL NODE NUMBER	
REPRESENTATION FORM OF STARTING-END LOCATION (= ABSOLUTE LATITUDE AND LONGITUDE)	
ABSOLUTE COORDINATE OF NODE P1 IN X ORIENTATION (LONGITUDE)	
ABSOLUTE COORDINATE OF NODE P1 IN Y ORIENTATION (LATITUDE)	
ABSOLUTE ORIENTATION BETWEEN NODES P1 → P2	
CODED DATA OF SHAPE (BIT STRING OF DEVIATION ANGLE $\theta_j$ OR DEVIATION ANGLE STATISTICAL PREDICTED VALUE DIFFERENCE $\Delta\theta_j$ THAT IS CODED)	
SHAPE DATA NUMBER (#N)	
CODE TABLE NUMBER	102b: SHAPE DATA WITH SECOND REPRESENTATION FORM (REFERENCING THE IMMEDIATELY PRECEDING SHAPE DATA WITH ABSOLUTE COORDINATE REPRESENTATION)
SAMPLE SEGMENT LENGTH L (m)	
TOTAL NODE NUMBER	
REPRESENTATION FORM OF STARTING-END LOCATION (= SECOND REPRESENTATION FORM)	
NUMBER OF NODES FROM STARTING END OF IMMEDIATELY PRECEDING SHAPE DATA WITH ABSOLUTE COORDINATE REPRESENTATION	
DEVIATION ANGLE FROM ORIENTATION OF MAIN LANE SHAPE	
CODED DATA OF SHAPE (BIT STRING OF DEVIATION ANGLE $\theta_j$ OR DEVIATION ANGLE STATISTICAL PREDICTED VALUE DIFFERENCE $\Delta\theta_j$ THAT IS CODED)	
⋮	
SHAPE DATA NUMBER (#3)	
⋮	

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FIG. 14



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FIG. 16 (a)

VECTOR DATA TYPE (= ROAD)	103	103a
⋮		
SHAPE DATA NUMBER (#N-1)		
CODE TABLE NUMBER		
SAMPLE SEGMENT LENGTH L (m)		
TOTAL NODE NUMBER		
REPRESENTATION FORM OF STARTING-END LOCATION (= ABSOLUTE LATITUDE AND LONGITUDE)		
ABSOLUTE COORDINATE OF NODE P1 IN X ORIENTATION (LONGITUDE)		
ABSOLUTE COORDINATE OF NODE P1 IN Y ORIENTATION (LATITUDE)		
ABSOLUTE ORIENTATION BETWEEN NODES P1 → P2		
CODED DATA OF SHAPE (BIT STRING OF DEVIATION ANGLE $\theta_j$ OR DEVIATION ANGLE STATISTICAL PREDICTED VALUE DIFFERENCE $\Delta\theta_j$ THAT IS CODED)		103b
SHAPE DATA NUMBER (#N)		
CODE TABLE NUMBER		
SAMPLE SEGMENT LENGTH L (m)		
TOTAL NODE NUMBER		
REPRESENTATION FORM OF STARTING-END LOCATION (= THIRD REPRESENTATION FORM)		
NUMBER OF NODES FROM STARTING END OF PRECEDING SHAPE DATA		
CODED DATA OF SHAPE (BIT STRING OF DEVIATION ANGLE $\theta_j$ OR DEVIATION ANGLE STATISTICAL PREDICTED VALUE DIFFERENCE $\Delta\theta_j$ THAT IS CODED)		
⋮		
SHAPE DATA NUMBER (#3)		
⋮		

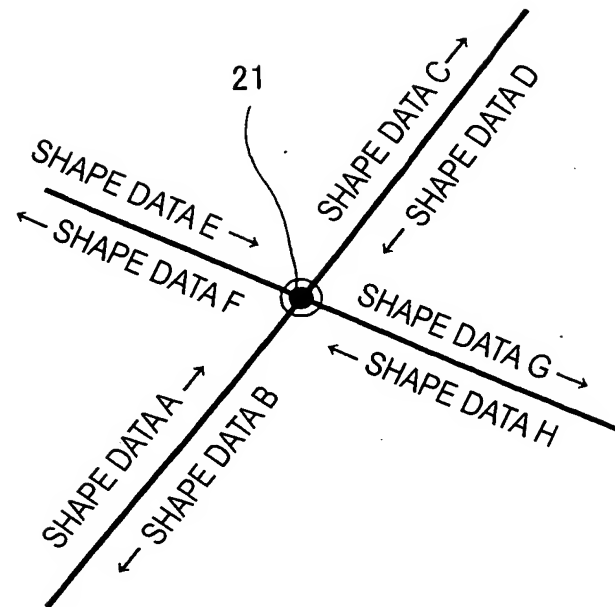
FIG. 16 (b)

REFERENCE SHAPE DATA NUMBER = N	104
LEFT/RIGHT TURN WAITING TIME	
⋮	



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FIG. 17



(TERMINAL END OF SHAPE DATA A)  
= (STARTING ENDS OF SHAPE DATA B)  
= (STARTING ENDS OF SHAPE DATA C, F, G)  
= (TERMINAL ENDS OF SHAPE DATA D, E, H)

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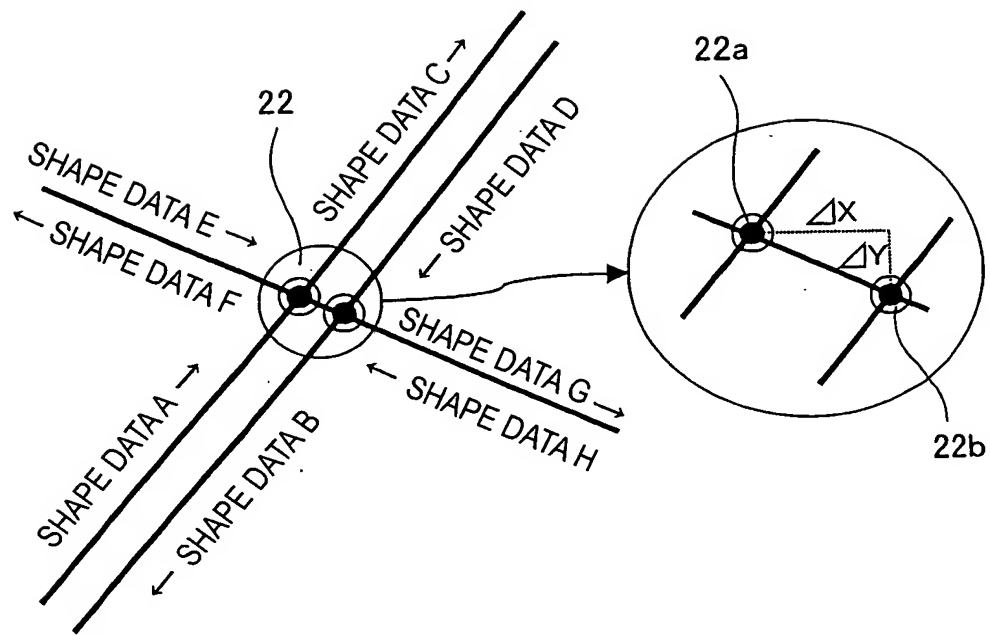
FIG. 18

105  
↙

VECTOR DATA TYPE (= ROAD)
SHAPE DATA NUMBER (= $\alpha$ )
CODE TABLE NUMBER
SAMPLE SEGMENT LENGTH L (m)
TOTAL NODE NUMBER
REPRESENTATION FORM OF STARTING-END LOCATION (= FOURTH REPRESENTATION FORM)
SHAPE DATA NUMBER TO BE REFERENCED (= $\beta$ )
IDENTIFICATION OF STARTING END/TERMINAL END (= TERMINAL END)
ABSOLUTE ORIENTATION BETWEEN STARTING END → NEXT NODE
CODED DATA OF SHAPE (BIT STRING OF DEVIATION ANGLE $\theta_j$ OR DEVIATION ANGLE STATISTICAL PREDICTED VALUE DIFFERENCE $\Delta\theta_j$ THAT IS CODED)
⋮
SHAPE DATA NUMBER (= X)
⋮

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FIG. 19



(TERMINAL END OF SHAPE DATA A) + ( $\Delta X$ ,  $\Delta Y$ )  
= (STARTING ENDS OF SHAPE DATA B, G)  
= (TERMINAL ENDS OF SHAPE DATA D, H)

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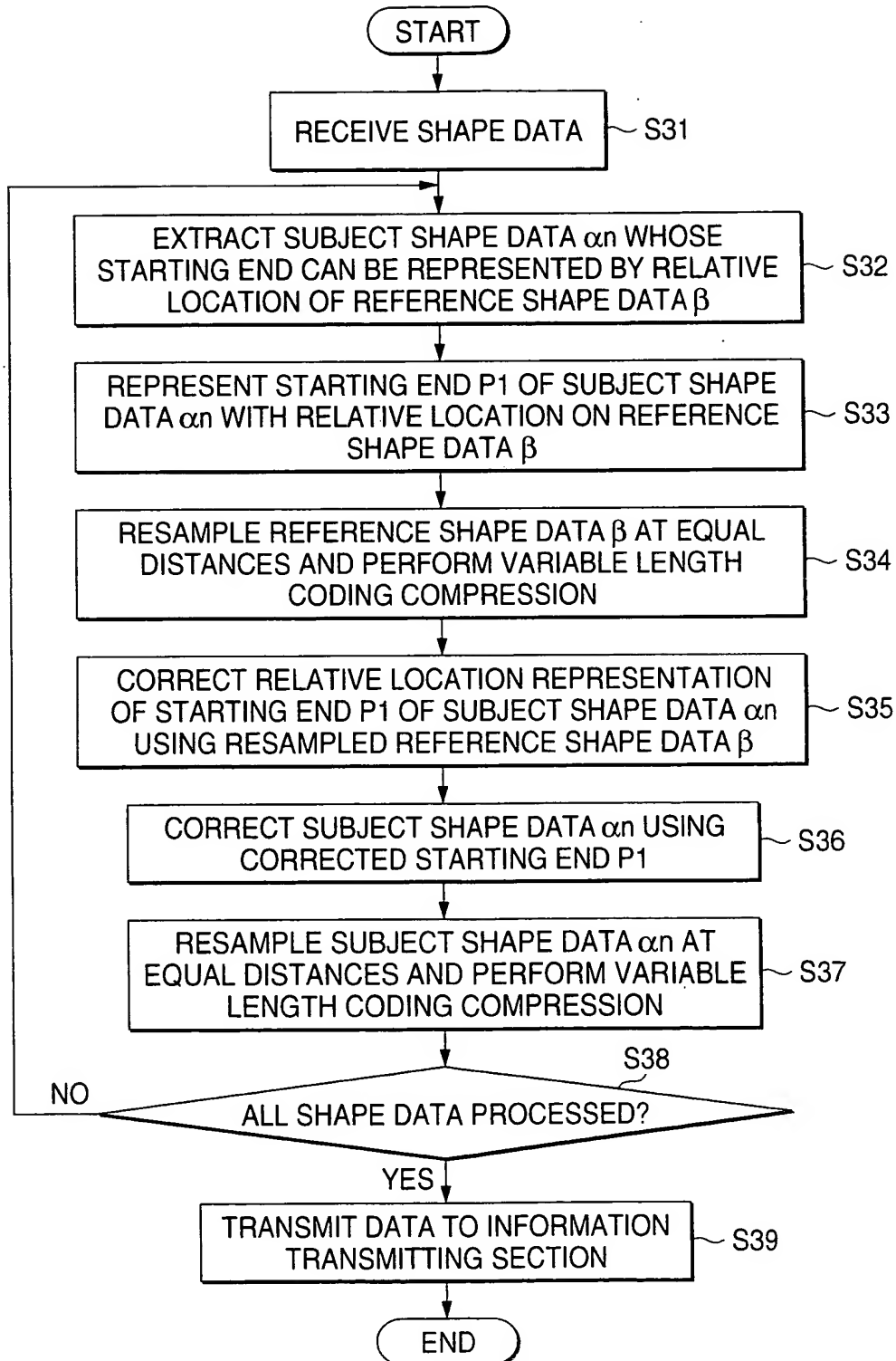
FIG. 20

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VECTOR DATA TYPE (= ROAD)
SHAPE DATA NUMBER (= $\alpha$ )
CODE TABLE NUMBER
SAMPLE SEGMENT LENGTH L (m)
TOTAL NODE NUMBER
REPRESENTATION FORM OF STARTING-END LOCATION (= FIFTH REPRESENTATION FORM)
SHAPE DATA NUMBER TO BE REFERENCED (= $\beta$ )
IDENTIFICATION OF STARTING END/TERMINAL END (= TERMINAL END)
OFFSET $\Delta X$ IN LONGITUDE ORIENTATION
OFFSET $\Delta Y$ IN LATITUDE ORIENTATION
ABSOLUTE ORIENTATION BETWEEN STARTING END $\rightarrow$ NEXT NODE
CODED DATA OF SHAPE (BIT STRING OF DEVIATION ANGLE $\theta_j$ OR DEVIATION ANGLE STATISTICAL PREDICTED VALUE DIFFERENCE $\Delta\theta_j$ THAT IS CODED)
⋮
SHAPE DATA NUMBER (= X)
⋮

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FIG. 21



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FIG. 22

